Contents

Introduction	ii
Characteristics of the Sugar Sector	
Consideration of the Sugar Sector	
Structure of the U.S. Sugar Industry	1
U.S. Sugar Prices and Consumption	, ⊥. 1∠
U.S. Sugar Prices and Consumption	15
The World Sugar Market	.23
Historical Perspective of U.S. Sugar Legislation	
Other Legislative Authorities To Support the U.S. Sugar Industry	25
Sugar Legislation: 1985-Present	.26
Economic Effects of the Sugar Program	.27
Effects of GATT and NAFTA on the Sugar Sector.	.30
The Uruguay Round GATT Agreement	.30
NAFTA	30
Current U.S. Sugar Market Issues	.31
Rising Beet Sugar Market Share	.31
Marketing Allotments	.32
Import Quota Issues	.32
Policy Options and Alternatives	.32
Policy Options Within Current Sugar Program Mechanisms	.32
Deficiency Payment Program	.33
Elimination of Domestic Program	.34
Further U.S. Sugar Policy Considerations	.34
Glossary	.54
Appendix Tables.	.41
Appendix Tables	.71
List of Tables	
1. U.S. sugar beet farms and average acreage harvested, by area, 1987/88, 1992/93 crop years	. 3
2. U.S. sugar beet processing companies	- 4
	(
3. U.S. sugarcane farms and average acreage harvested, by State	. 8
3. U.S. sugarcane farms and average acreage harvested, by State	. 10
3. U.S. sugarcane farms and average acreage harvested, by State	. 8 . 10 . 17
 3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 	. 8 . 10 . 17 . 19
 3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 	. 8 . 10 . 17 . 19 .21
 3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 	. 8 . 10 . 17 . 19 .21
 3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 	. 8 . 10 . 17 . 19 .21
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables	. 8 . 10 . 17 . 19 .21
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate	. 8 . 10 . 17 . 21 .21 .25
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area	. 8 . 10 . 17 . 21 .21 .25
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre	. { . 10 . 17 . 21 .25 .41 .42 .43 .44
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area	. 8 . 10 . 17 . 19 .21 .25 .41 .42 .43 .44
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates	. 8 . 10 . 17 . 19 .21 .25 .41 .42 .43 .44 .45
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area	. 8 . 10 . 17 . 19 .21 .25 .41 .42 .43 .44 .45
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Yield per harvested acre for sugar by area	. 8 . 10 . 17 . 19 21 25 41 42 43 44 45 47 48
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Yield per harvested acre for sugar by area 9. Sugarcane processors: Company, factory location and capacity	. 8 . 10 . 17 . 19 .21 .25 .41 .42 .43 .44 .45 .46 .47
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Yield per harvested acre for sugar by area 9. Sugarcane processors: Company, factory location and capacity 10. U.S. raw sugar prices, duty fee-paid, New York, monthly, quarterly, and fiscal and calendar years	. 8 . 10 . 17 . 19 21 25 41 42 43 44 45 47 48
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Yield per harvested acre for sugar by area 9. Sugarcane processors: Company, factory location and capacity 10. U.S. raw sugar prices, duty fee-paid, New York, monthly, quarterly, and fiscal and calendar years 11. U.S. wholesale refined beet sugar prices, Midwest markets, monthly, quarterly, and	. 8 . 10 . 17 . 19 .21 .25 .41 .42 .43 .44 .45 .46 .47 .48
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Production for sugar by area 9. Sugarcane processors: Company, factory location and capacity 10. U.S. raw sugar prices, duty fee-paid, New York, monthly, quarterly, and fiscal and calendar years 11. U.S. wholesale refined beet sugar prices, Midwest markets, monthly, quarterly, and fiscal and calendar years	. 8 . 10 . 17 . 19 .21 .25 .41 .42 .43 .44 .45 .46 .47 .48 .50
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Yield per harvested acre for sugar by area 9. Sugarcane processors: Company, factory location and capacity 10. U.S. raw sugar prices, duty fee-paid, New York, monthly, quarterly, and fiscal and calendar years 11. U.S. retail refined sugar prices, United States, monthly, quarterly, and by fiscal and calendar years 12. U.S. retail refined sugar prices, United States, monthly, quarterly, and by fiscal and calendar years	. 8 . 10 . 17 . 19 21 .25 .41 .42 .43 .44 .45 .46 .47 .48 .50
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Yield per harvested acre for sugar by area 9. Sugarcane processors: Company, factory location and capacity 10. U.S. raw sugar prices, duty fee-paid, New York, monthly, quarterly, and fiscal and calendar years 11. U.S. retail refined sugar prices, United States, monthly, quarterly, and by fiscal and calendar years 12. U.S. retail refined sugar prices, United States, monthly, quarterly, and by fiscal and calendar years 13. Cost of producing and processing beet sugar in the United States, 1981-92 crops	. 8 . 10 . 17 . 19 . 21 . 25 . 41 . 42 . 43 . 44 . 45 . 46 . 47 . 48 . 49 . 50 . 51 . 52
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugarcane: Acreage harvested for sugar, by area 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Yield per harvested acre for sugar by area 9. Sugarcane recovery cane, factory location and capacity 10. U.S. raw sugar prices, duty fee-paid, New York, monthly, quarterly, and fiscal and calendar years 11. U.S. wholesale refined beet sugar prices, Midwest markets, monthly, quarterly, and fiscal and calendar years 12. U.S. retail refined sugar prices, United States, monthly, quarterly, and by fiscal and calendar years 13. Cost of producing and processing beet sugar in the United States, 1981-92 crops 14. Variable and fixed costs of producing and processing beet sugar in the United States, 1981-92 crops	. 8 . 10 . 17 . 19 21 .25 .41 .42 .43 .44 .45 .46 .47 .48 .50
3. U.S. sugarcane farms and average acreage harvested, by State 4. U.S. cane sugar refiners: Company, factory location, and capacity 5. U.S. total consumption of caloric sweeteners, 1980-94 6. World sugar supply, use, stocks-to-consumption ratio, and price 7. World sugar trade, by leading sugar exporters and importers 8. U.S. national average cane and beet sugar loan rates Appendix Tables 1. Sugar beets: Acreage harvested by region and State, crop year 2. U.S. sugar beets and beet sugar: Acreage, production, yield, and recovery rate 3. U.S. sugarcane: Acreage harvested for sugar, by area 4. U.S. cane sugar yield per acre 5. U.S. cane sugar production by area 6. U.S. cane sugar recovery rates 7. U.S. sugarcane: Production for sugar by area 8. U.S. sugarcane: Yield per harvested acre for sugar by area 9. Sugarcane processors: Company, factory location and capacity 10. U.S. raw sugar prices, duty fee-paid, New York, monthly, quarterly, and fiscal and calendar years 11. U.S. retail refined sugar prices, United States, monthly, quarterly, and by fiscal and calendar years 12. U.S. retail refined sugar prices, United States, monthly, quarterly, and by fiscal and calendar years 13. Cost of producing and processing beet sugar in the United States, 1981-92 crops	. 8 . 10 . 17 . 19 . 21 . 25 . 41 . 42 . 43 . 44 . 45 . 46 . 47 . 48 . 49 . 50 . 51 . 52

18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 31. 32.	Beet sugar grower and processor costs and returns, refined basis Cane sugar grower and processor costs and returns, 1981-92 Sugar beets: Average production costs per planted acre and net ton, by sugar beet region, 1992 crop Beet sugar: Processing costs per pound of refined sugar and net ton of sugar beets, by cost item and area, 1992 crop Sugar beets: Production and processing costs per net ton of sugar beets and pound of refined sugar, 1992 crop Sugarcane: Average production costs per harvested acre, net ton of sugarcane and per pound of 96 degree raw sugar, by cost item and area, 1992 crop Raw sugar: Processing costs per net ton of sugarcane and pound of 96-degree raw sugar, by cost item and area, 1992 crop Sugarcane: Production and processing costs per ton of sugarcane and pound of 96-degree raw sugar, by cost item and area, 1992 crop World raw sugar prices, monthly, quarterly, and fiscal and calendar years World refined sugar prices, monthly, quarterly, and fiscal and calendar years U.S. sugar imports under quota and tariff-rate quota, by country U.S. sugar (including Puerto Rico) supply and use, fiscal years U.S. high-fructose corn syrup (HFCS) supply and use, by calendar years Sugar beet and sugarcane prices and crop values Refined beet sugar loan rates, by regions Raw cane sugar loan rates, by area	54 54 55 56 57 58 59 60 61 61 62 65 66 67 67 67
	Gross returns. marketing expenses, and net return from beet sugar	68
	List of Figures	
1	•	2
2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 20. 21. 22. 23. 24. 25. 26. 27. 28.	U.S. sugar beet acreage harvested Sugar beet yield per acre Beet sugar per acre U.S. beet sugar production Beet sugar recovery per ton sugar beets U.S. production of sugar from beet molasses desugarization U.S. sugar beet factories daily average slicing capacity U.S. cane sugar production U.S. sugarcane area harvested for sugar U.S. cane sugar production, by State Sugarcane acreage harvested for sugar, by State Cane sugar yield per acre, by State. U.S. sugarcane mills: Average daily grinding capacity U.S. cane sugar refinery numbers and daily capacity Costs and returns for sugar beet growers. Costs and returns for beet sugar Total economic cost of beet sugar, Eastern and Western United States Costs and returns for sugarcane growers Costs and returns for cane sugar Cost of production of U.S. beet and cane sugar World and U.S. raw sugar prices, 1950-94 U.S. raw, wholesale and retail refined sugar prices, quarterly Margin between refined and raw sugar prices U.S. sugar consumption U.S. consumption in selected regions	3 4 4 5 5 6 7 7 7 7 7 8 9 11 12 12 12 13 13 .14 14 15 .16 .16 17 18
30. 3 1. 32. 33. 34.	Production in selected countries	.20 .22 .22 .23 .23
	Ratio of U.S. beet sugar loan rate to cane sugar loan rate	28